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# Worldwide Report

EPIDEMIOLOGY

No. 301



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8 November 1982

**WORLDWIDE REPORT  
EPIDEMIOLOGY**

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ARGENTINA

WORLD CONFERENCE ON TUBERCULOSIS TO BE HELD DECEMBER

Buenos Aires LA NACION in Spanish 26 Sep 82 p 10

[Text] The 25th World Conference on Tuberculosis and Diseases of the Respiratory System will be held in this capital this coming 15-18 December. Dr Atilio P. Bado, technical and administrative director of the Argentine Anti-Tuberculosis League, provided details on this scientific event.

Objectives

"The basic aim of the conference," said Dr Bado, "is to study modern methods and strategies to control the disease in underdeveloped and developing countries. Representatives of Latin American countries will participate. They have a special interest in this conference, because it will enable them to study changes in programs for the control of tuberculosis in each one of them."

Asked about the resources that the League has obtained in order to enable it to bring about such an important scientific conference, he said that the association has received aid from the national ministries of Social Welfare and Public Health, from the municipal government of Buenos Aires, from the voluntary cooperation of business and industrial enterprises, etc., and also from the National Science and Technology Committee and the School of Medicine, and of course from all Argentine members, who by inauguration time we hope will number more than a thousand."

Serious Problem

Dr Bado said that at present "tuberculosis throughout most of the world constitutes a serious problem. Mortality from this disease has risen to high figures in the underdeveloped countries of Africa, Asia, and Latin America.

In our country the index continues to be high and serious, but there is a trend toward progressive and sustained improvement. The sick rate and

mortality percentages are on the decrease, according to the most recent statistics. Also to be noted with respect to the attainment of that aim is the importance of the new antibiotics that are so very effective in the cure of the sick."

#### Affected Regions

"In Argentina," he continued, "the greatest tubercular areas are in the northeast (Jujuy, Salta, Tucuman, and Santiago del Estero) and in some sectors of Chaco Province, and north of Santa Fe. Also the Patagonian mountain range area is considered to have a high incidence of tuberculosis. The index of sick persons in the country fluctuates between 35 and 40 per 100,000, which is significant, but not alarming. The mortality rate is 6.9 per 1,000."

"Each year," continued Dr Bado, "approximately 16,000 cases of tuberculosis are recorded, 8,000 to 9,000 of which are confirmed by positive bacciloscope; that is, they eliminate the Koch bacilli."

8255  
CSO: 5400/2005

ARGENTINA

POLIO CASES REPORTED IN CHACO PROVINCE

Buenos Aires CLARIN in Spanish 20 Oct 82 p 18

[Text] Resistencia (from our agency)--The provincial Ministry of Public Health reported that three presumed cases of polio are being analyzed in the provincial pediatrics hospital. At the same time it has ordered a massive vaccination campaign of all children from 2 to 14 months of age in Gran Resistencia, where more than 200,000 persons live. Instructions have also been given to the population, especially regarding how to use water for drinking purposes, since almost 40 percent lack drinking water.

According to statistics, there have been no polio cases in the entire province for more than 10 years. A few days ago the Ministry of Health denied an outbreak of meningitis in the Villa Espana district. It stated that it was a question of a benign form of that disease and that the cases were the ordinary kind.

Upon being questioned concerning the presumed cases of infantile paralysis, Dr Damian Samudio, assistant secretary of health in Gran Resistencia, explained that three children are being analyzed and checked in the Doctor Avelino Castelan Pediatrics Hospital and that all of the cases are progressing favorably." He also specified that "laboratory analyses are being made to confirm the diagnosis." The doctor further said that as a preventive measure a program to vaccinate citizens has been initiated, starting with districts in the municipality of Fontana, one of the integral parts of Gran Resistencia, about 10 kilometers from the capital city.

Dr Samudio also said that very precise information has been given regarding the range of health services in each of the responsible health centers, sub-centers, and health locations that have the resources needed for those purposes, and that the people have been urged to make use of those services. The services will be available during weekends also, contrary to the usual schedule.

It must be pointed out that throughout Gran Resistencia there are depressed areas, all of them on the periphery, in which many deprived families live.

They have nutrition and hygiene problems and live in precarious housing. A high index of infant mortality has been noted in these areas.

Less than a month ago the municipal administrator of Resistencia stated that the capital city "is bearing the burden of the economic depression that Chaco is experiencing. Our marginal towns are being settled in an inconceivable manner."

8255  
CSO: 5400/2005

ARGENTINA

BRIEFS

RAHIA BLANCA--An outbreak of trichinosis was detected in the Villa General Arias area, in a small locality situated about 15 kilometers from this town on the Punta Alta highway. Two inhabitants of the above mentioned locality, a woman and a child, who probably are the most dangerously ill, are in the local Punta Alta general hospital with symptoms of trichinosis. Others who were afflicted with a mild case left the hospital yesterday afternoon, but must continue to receive adequate medical treatment. The hospital was expecting the arrival of other persons who were poisoned by ingestion of pork meat and sausage. It was reported that a total of 40 persons are to be checked to determine whether or not they have been affected. All live in the rural area between Villa General Arias and Bajo Hondo, both localities being in the district of Coronel de Marina Leonardo Rosales. Dr Alberto Ruben Corinaldesi, secretary of the Municipal Public Health Service, said that the source of the infection has been pinpointed and that a sanitary cordon surrounds it. The trichinosis outbreak emanated from a rural establishment located between Villa Arias and Bajo Hondo, the property of Ruben Fernandez, where the pigs that are carriers of the disease were kept. Although it has not been reported officially, it was learned that some of the contaminated products probably had been sent to the province of La Pampa and to Mar del Plata. [Text] [Buenos Aires LA NACION in Spanish 29 Sep 82 p 10] 8255

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## TUBERCULOSIS OUTBREAK FOUND AMONG MELBOURNE DRIFTERS

Melbourne THE AGE in English 17 Sep 82 p 5

[Article by Philip McIntosh]

[Text]

There is an epidemic of tuberculosis among Melbourne's homeless men, according to a report by a senior Health Commission doctor.

The report follows an X-ray survey last month which found seven active cases of the disease and seven suspected cases among 475 men at Melbourne refuges.

This represents an infection rate of between 1.5 and 3 per cent, many times higher than in the general community.

The report was written by the acting director of tuberculosis services in the Health Commission, Dr Stefan Csordas. It said the number of detected TB cases among homeless men were 13 in 1976, eight in 1977, 13 in 1978, six in 1979, 17 in 1980 and 13 in 1981.

"Our survey covers only a certain percentage of Melbourne's homeless population," said the report. "The chances that there are more infectious alcoholic tuberculosis sufferers roaming around in Melbourne are very great.

"In anyone's language these figures indicate a continuous and slowly increasing epidemic among Melbourne's derelict population," Dr Csordas's report said. "The situation is dangerous because these people mix freely during the day with children and adults and are very difficult to catch before they become ill and are admitted to hospital."

However, some of the conclusions drawn by Dr Csordas

have been disputed by other doctors. The Director of Public Health, Dr Bertram McCloskey, and a private physician who recently investigated TB services in Victoria, Dr Jonathan Streeton, said the disease was endemic among homeless men rather than epidemic.

This meant that there was no fresh outbreak and spread of the disease throughout the community but rather a continuing presence in a section of the population.

Dr McCloskey said he did not believe the problem was dangerous because the derelicts were usually recluses and had a limited range of contacts.

But Dr McCloskey and Dr Streeton agreed that more cases of TB among homeless men could be expected because more people were living in circumstances where their risk of infection was increased.

Dr Csordas has written to particular groups, including the police and welfare societies which manage refuges, to advise them about precautions for their employees.

The big welfare centres, such as Ozanam House, the Gil Memorial Home and Gordon House, advise their employees about having regular health checks. The St Vincent de Paul Society, which runs Ozanam House, is in the process of advising its hundreds of voluntary workers who may have been in contact with infected homeless men.

MINIMIZATION OF INTESTINAL TRACT DISEASES URGED

Dacca THE NEW NATION in English 6 Oct 82 p 5

[Editorial]

[Text]

Reports of deaths from cholera in different parts of the country as are appearing in newspapers are a cause of concern. Cholera has broken out in a menacing, if not epidemic, form in Netrokona, Brahmanbaria, Kishoreganj and other places. Thirty three persons are reported to have died in Netrokona alone while the toll all over the country may run into hundreds. The hospitals and clinics in the interior, ill-equipped as ever, are reportedly unable to cope with the exigency and many deaths have reportedly resulted due to shortage of saline and life-saving medicines. The Thana Medical Officers have asked for special vaccination teams to be sent to the interior and increased supply of saline.

In the fight against cholera the time factor is crucial and if the process of dehydration can be stayed by timely medical attention, no case of cholera should be lethal. It has been alleged that saline is not available in the medicine shops even in Netrokona town or is being sold at twice the price. Such charges deserve probe.

Agreeing that our health service in the interior has many limitations, yet saline is so essential, especially in a rural clinic, that every medical facility is expected to be well stocked with it. What is more, why supply could not be rushed and special teams could

not be sent to endemic areas ? It is a pity that in an emergency causing numbers of preventable deaths our health administrators seem to be napping.

In milder cases of diarrhoea home-made saline is also effective but most people in the interior do not know how to prepare it. The mass media can help in educating the rural people on the do's and dont's in the case of an attack of cholera. We have an international diarrhoeal diseases institute conducting wide research on the disease which should come out with concrete proposals for containing fatal diarrhoea. As a first step to the movement for 'health for all' deaths from cholera and diarrhoeal diseases must be minimised.

CSO: 5400/7022

BRIEFS

DIPHTHERIA CASES REPORTED--Three (3) children died of diphtheria in different parts of Bagerhat P.S. recently. The victims are a 12-year-old girl of village Bhutiamary, an 8-year-old boy of village Rauaveri and another six-year-old child from the village of Muniganj (under Bagerhat Municipal area). Earlier a 6-year-old girl died of the disease in the village Harinkhana under Bagerhat Municipal area. [Text] [Dacca THE NEW NATION in English 2 Oct 82 p 2]

CHOLERA IN KISHOREGANJ--Kishoreganj, Oct 4--Cholera has claimed seven lives in different areas of Kishoreganj pourashava during the last few days. Of them four persons died in the Kishoreganj hospital while two at Batrish and one at Gourangabazar. One person also died at village Sadullarchar about two miles from the Kishoreganj town. Besides about 300 persons are suffering from the disease in the subdivision. When contacted the Subdivision Medical Officer Kishoreganj told that 90 patients from different areas were admitted in the subdivisional hospital during the period. He also said that there is scarcity of saline and other medicines in the hospital. Prices of saline and other medicines have increased in the market. When contacted the Deputy Civil Surgeon said that steps including vaccination had been taken in this regard. [Text] [Dacca THE BANGLADESH OBSERVER in English 5 Oct 82 p 11]

BRAHMANBARIA CHOLERA DEATHS--Brahmanbaria, Oct 5--Four persons died of cholera and another 50 were attacked as the disease broke out in an epidemic form in two police stations under Brahmanbaria subdivision according to an official source. The thanawise breakup of the cholera affected villages are two in Brahmanbaria and two in Nasirnagar. When contacted, Deputy Civil Surgeon Brahmanbaria confirmed the death of 4 persons. The affected villages are Shimrailkanda under Brahmanbaria police station and Goainagar and Masna under Nasirnagar police station. A 5-member team headed by Deputy Civil Surgeon visited the affected areas and necessary medicine has been sent and distributed. [Text] [Dacca THE BANGLADESH OBSERVER in English 6 Oct 82 p 1]

CHOLERA IN SAIDPUR--Saidpur, Oct 7--At least 29 persons died of cholera and diarrhoea in Nelphamari Subdivision within a week. Cholera broke out in epidemic form in different areas of the subdivision. Four persons died in Kamarpukur union, 17 persons in Chowra union and seven in Ramnagar union. According to the Deputy Civil Surgeon, medical teams have been rushed to the affected areas. Sub-Divisional Officer also visited the affected areas. [Text] [Dacca THE NEW NATION in English 8 Oct 82 pp 1, 8]

MORE CHOLERA REPORTED--Brahmanbaria, Oct 8--Cholera broke out in an epidemic form in four thanas of the subdivision where it has already claimed 18 lives and attacked another 81 persons. The affected thanas are Brahmanbaria, Nasir Nagar, Sarail and Kasba. Brahmanbaria is the worst affected area where 7 persons died of the disease in only four days. The Deputy Civil Surgeon has confirmed the death of 18 persons but described the disease as "gastroenteritis." Medical teams have been sent to the affected areas and a control room has been set up in Brahmanbaria Sadar Hospital, he said. [Text] [Dacca THE NEW NATION in English 9 Oct 82 p 1]

CHOLERA IN KISHOREGANJ--Rishoreganj, Oct 10--Cholera took a toll of seven days. Of them four persons died at Kishoreganj hospital, one at Batrish, one at Gourangabazar and one at Shandullarchair near the town. According to reports about 200 persons in different areas have been attacked with cholera. The Subdivisional Medical Officer informed that about 90 patients from different areas were admitted into the hospital. Measures have been taken to combat the disease. He, however, told that there was dearth of saline and other necessary medicines at the hospital. Adequate supply of necessary medicines for arresting further spread of the disease has been urged. [Text] [Dacca THE BANGLADESH TIMES in English 11 Oct 82 p 2]

TEAM TO COMBAT DIARRHEAL DISEASES--On reports of outbreak of diarrhoeal diseases and suspected cholera in various parts of the country, the Health Department have taken effective measures to treat the patients in the affected areas with sufficient oral rehydration salt (oral saline), injection cholera saline and tetracycline capsules, says an official announcement. In the affected thanas of Madan, Barhatta, Mohongonj and Atpara of Mymensingh district a number of medical teams are engaged in treating the affected patients. They are also taking preventive measures against further spread of the disease by distributing water purifying tablets, inoculation against cholera and health education. Besides, a special team comprising doctors and ICDDRB experts was sent from Dhaka to the affected areas with necessary medicines and oral rehydration salt to gear up anti-epidemic work. The team has collected rectal swabs from patients and sample of sources of drinking water for bacteriological examination. Similarly in the affected areas of Rangpur and Comilla districts effective measures both curative and preventive are being taken by the local medical teams. Supply of enough oral rehydration salt (oral saline), injection cholera saline, water purifying tablets, injection ACV and capsule tetracycline is being ensured in the affected areas. Health staff from unaffected areas are being companded to work for more intensive curative and preventive measures in the affected areas. The situation in the affected areas is under control. [Text] [Dacca THE BANGLADESH TIMES in English 12 Oct 82 p 8]

CSO: 5400/7019

BARBADOS

BRIEFS

SEWERAGE SYSTEM IMPROVEMENTS--Four connections have been made to the Bridgetown sewerage system to date and in another two weeks time an additional 10 are to be made. So said acting Minister of Health Dr. Don Blackman who was speaking in the House of Assembly yesterday on a resolution for a sum of money from the Consolidated Fund. Dr. Blackman said that the delays in making the connections stem from the fact that applicants have to submit detailed plans before the linkups are carried out. He noted that the Water Authority which will be taking over the operations of the system on October 15, is preparing to ensure that Barbadians have an efficient sewerage system in much the same way as the water supply system. [Excerpt] [Bridgetown ADVOCATE-NEWS in English 23 Sep 82 p 1]

CSO: 5400/7504

BRAZIL

UFMG RESEARCHERS DEVELOP VACCINE AGAINST LEISHMANIASIS

Sao Paulo FOLHA DE SAO PAULO in Portuguese 11 Sep 82 p 9

[Article by Luis Michalick]

[Text] Belo Horizonte--A team of researchers from Minas Gerais Federal University (UFMG) has developed a vaccine against cutaneous American leishmaniasis, formerly known in Brazil as "Bauru ulcer," and listed by the World Health Organization as one of the six major endemic diseases in the world. The group of UFMG scientists, under the coordination of Professor Wilson Mayrink, has been working on the project since 1973. Last year the vaccine was administered to army troops stationed in the Amazon region with "highly promising" results.

Man contracts this disease outdoors, primarily in areas where deforestation activities are occurring, and even in areas being farmed, where it is transmitted by mosquitos. The disease is characterized by cutaneous lesions caused by a parasite introduced by the insect bite. Although it is not lethal, leishmaniasis mainly affects cartilage tissue, such as the nose, deforming the face of the patient.

The vaccine developed in Minas Gerais is unlike any other in the world, according to the scientists. Another important point in relation to the new vaccine is that leishmaniasis can be cured only by treatment using highly toxic substances, with many contraindications and a high risk for the patient.

Although the team has been working on the vaccine since 1973, the results of the project were only recently released in a document indicating how the drug was successfully administered to soldiers at the Amazon Military Post.

According to the UFMG scientists, the initial research to identify an agent to combat leishmaniasis dates back to 1939-40 and work done by Prof Samuel R. Pessoa, a parasitologist and physician who was a professor at the USP [University of Sao Paulo] Medical School and one of the leading experts in Brazilian tropical medicine.

On the basis of Professor Pessoa's research, the UFMG team went on to develop the vaccine, using equipment from the Institute of Biological Sciences. During the same year, the group began observations of vaccination trials in Barracao, Caratinga Municipality, in Minas.

In 1978 and 1979, further research was undertaken, this time with the support of the National Council for Scientific and Technological Development (CNPq), and the Superintendency for the Public Health Campaign in Viana, Espírito Santo. A group of 179 people was immunized and the scientists observed that the vaccine developed cellular immunity similar to what is found in individuals naturally infected and cured after treatment with antimonials.

More trials were conducted on military troops stationed in the Amazon in 1981, confirming the effectiveness of the vaccine. According to studies on the incidence of leishmaniasis, nearly 30 percent of the soldiers stationed in the Amazon jungles contract the disease during their stay in the jungle.

#### Vaccine Resulted in 67 Percent Reduction

As soldiers have been stationed at various locations in the region in recent years, either to patrol the Brazilian border, for jungle survival training or on road-building detachments, the disease always created problems for the military base. A soldier who contracted leishmaniasis usually had to be discharged from the service.

The Health Ministry, interested in the results obtained by the group of scientists at UFMG, prepared vaccination trials, in compliance with all the standards set by the World Health Organization, and with the support of the Ministry of the Army. Some 667 soldiers were vaccinated. The results showed that the vaccine reduced the disease by 67 percent in the group.

The results of this last test were regarded as "highly promising," taking into account the parameters of the World Health Organization, since nearly 70 percent of the persons vaccinated were immunized and protected against the disease. Although this was not confirmed by the members of the research group, we know that other countries have already expressed an interest in obtaining the vaccine developed by the UFMG Institute of Biological Sciences.

On an optimistic note, the discovery by the group of scientists could signify an opportunity for the development of vaccines to combat other diseases. The vaccine developed in the UFMG laboratories is the first in the world against protozoa (microorganisms that produce diseases such as Chagas' disease and sleeping sickness). For this reason it can be considered as a major scientific advance, according to the scientists.

For Brazil, the new vaccine will result in a great saving of foreign exchange, since the drugs used up to now to cure leishmaniasis, based on antimonials, are imported. It will also mean a major saving for the social welfare system, since there are currently more than 50,000 persons, not counting the army engineering corps, working in the Amazon region on the Grande Carajás project or on settlement projects.

The group of UFMG scientists used the laboratory of the Institute of Biological Sciences at that university to develop their research, and they also received support from SUCAM, and the Ministries of Health and the Army. Financial assistance was provided by FINEP (Funding Authority for Studies and Projects), which allocated about 50 million cruzeiros.

In addition to Wilson Mayrink, the coordinator, the following professors and scientists worked on the Leishmaniasis vaccine project: Carlos Alberto Cesti from the School of Pharmacology at UFMG, Maria Norma Melo from the UFMG Institute of Biological Sciences (ICB), Marilene Suzan Marques from the ICB, Magno Dias from the Federal University of Ouro Preto, Paulo de Araujo Magalhaes from SUCAM and Antonio Oliveira Lima from the Ataulfo Paiva Foundation of the Federal University of Rio de Janeiro.

9805

CSO: 5400/2001

BRAZIL

BRIEFS

BRASILIA MENINGITIS INCIDENCE--The Health Secretariat for the Federal District reported yesterday that 30 cases of meningitis have been recorded a month and that between July and September, this number rose as a result of the hot weather and low relative humidity. Last August alone, the Secretariat reported 42 cases, including 8 adults and 34 children, with 6 deaths. During the first 10 days of September, 15 cases were reported. Dr Roseli Cerqueira de Oliveira from the Health Secretariat said that meningococcal meningitis is the only type that can cause an epidemic. "We have found an average of five cases of meningococcemia a month in the federal district. Although this number is high, it was projected and the situation is under control, since we have conducted all the necessary tests," the physician said. The incidence of meningitis is greater during this time of the year in the federal district, and the secretariat has been conducting a campaign to inform the people, encouraging people, and especially children, to drink a lot of liquids and to eat healthful food. The physician from the Health Secretariat said that even though the number of cases is high, the figure is not alarming. "Meningococcal infection is the only kind of meningitis that concerns us. The others, caused by a virus, bacteria or other agents, do not involve any risk of becoming epidemic and are therefore more easily controlled. Out of the 15 cases reported this month, only one was meningococcal," Roseli de Oliveira said. [Text] [Rio de Janeiro O GLOBO 11 Sep 82 p 7] 9805

CSO: 5400/2001

## BRIEFS

**SEVEN DIE FROM CHOLERA--**Seven persons have so far died following an outbreak of cholera at Tamale and its surrounding towns and villages. About 109 cases have been treated, Mr William Abass, principal technical officer in charge of the Epidemiology Division of the Ministry of Health, has told the Ghana News Agency at Tamale. Mr Abass said his outfit, in collaboration with the Environmental Health team, had embarked on a health education campaign for people to keep their homes and surroundings clean. This exercise, together with restrictions on visits to cholera patients now held in quarantine, had helped to check the spread of the disease. Mr Abass denied allegations that his outfit was charging cholera patients ₦50 per head but said patients given dehydrated salt were likely to pay a small fee. [Text] [Accra GHANAIAN TIMES in English 15 Oct 82 p 5]

CSO: 5400/30

## BRIEFS

**CASES OF CALCUTTA ENCEPHALITIS**--The Health Officer, Calcutta Corporation, said on Friday that conditions were not suitable for the breeding of mosquitoes carrying encephalitis virus in Calcutta, normal breeding ground of such virus being paddy fields and marshy areas. However, he said that comprehensive measures were being taken against all types of mosquito-carried infections. Where cases are reported, focal and space spray would be resorted to and in case of non-viral encephalitis, pigs and other carriers would be removed from the affected areas. Our Staff Correspondent in Santiniketan adds: Encephalitis in Birbhum district appears to be on the rise. Though most of the cases have been reported from the Mayureshwar, Jhurajpur, Hetanpur, Sainthia and Suri areas, the arrival of the disease in Bolpur was noticed when Mantulohar, an Irrigation Department employee, who was taken from here to Suri hospital after the attack died there last night. According to Dr S. S. Konar, chief medical officer, Birbhum, till now there have been 35 cases of encephalitis in the district. Twelve people have died. But the actual number of cases appears to be much higher. According to a Suri hospital source almost every day three people are admitted. A few days ago there were at least 10 patients in that hospital with the disease. Dr Konar, however, said that the Health Department was laying emphasis on the preventive side. About 500 people have been vaccinated. Pesticides like BHC are being sprayed in piggeries and cow sheds and people are being advised to sleep under mosquito nets. Dr Konar said that a strange disease had been reported from the Kamruphat area. Its victims at first suffer from fever followed by dizziness. At the last stage the genital organs of the victims become retracted. The symptoms, however, disappear after a few days. (Text) (Calcutta THE STATESMAN in English Oct 12, 1951)

**ENCEPHALITIS EPIDEMIC**--Midnapore, Oct 1--Encephalitis which claimed 14 lives in the Jhurajpur town during the past few weeks was now rampant, according to the chief medical officer. He said that 40 patients suffering from the disease were being treated in different hospitals and the anti-encephalitis drive has been intensified in the affected areas. People suffering from any type of fever had been asked to contact local hospitals in Jhurajpur areas. (Text) (Calcutta THE STATESMAN in English Oct 12, 1951)

WEST BENGAL LEPROSY STATISTICS--About 18 million people in the world suffer from leprosy. In India about 3.2 million people are afflicted by the disease. In West Bengal, about 400,000 are recorded to be suffering from leprosy. These figures are displayed in one of the charts in an exhibition on "Health for All by 2000 A.D." opened at the Indian Museum, Calcutta, on Friday. The West Bengal Nursing Council organized the exhibition and trainee nurses participated. An attempt was made through a number of models and charts to highlight aspects of health care and create an awareness of the need for ensuring community health. Charts emphasizing preventive and curative aspects of leprosy, family welfare measures, and environmental pollution were displayed at the exhibition opened by the Director of Health Services, Dr P.S. Chakraborty. [Text] [Calcutta THE STATESMAN in English 2 Oct 82 p 3]

CSO. 5400/7017

## BRIEFS

WATER SYSTEM IMPROVEMENT--WHERRY WHARF Limited at Newport East, downtown Kingston has put in place a new system in which the supply of water, to its chemical plant has been separated from the Corporate Area's public water supply system. This follows the contamination of a section of Western and Central Kingston's water supply by wood-preserving chemicals in July. A company spokesman told the 'Gleaner' yesterday that about a week ago the company received a letter from the Water Commission approving a preventive system. This the spokesman described as "a double-safe system". He said that they will have a valve at the gate called the Low Pressure Back Flow Preventor valve. This was specially imported at a cost of about U.S. \$4,000-\$5,000. He said that a separate feed tank had been installed. Explaining the system, he said that both the water coming into the storage tank and the water going out of the storage tank into the chemical tank would be fed through the top of the tank. The pipe will be suspended over the top of the tank so there is "absolutely no possibility of feedback into the water supply system". The spokesman said that the valve was left to be put in, and that it was being cleared at the airport and would be installed in the next few days. The system will then be inspected by the water Commission before the plant is put back into operation. [Excerpt] [Kingston THE DAILY GLEANER in English 8 Oct 82 p 1]

PARISH SEWAGE PROBLEMS--The problem of untreated sewage entering the Priory Beach, inadequate facilities at Blackstonedge All Age School, and a cutback in the indigent latrine assistance programme and other health matters, were raised at a recent meeting of the St. Ann Parish Council. The Chief Public Health Inspector, Mr. F. G. Hylton, brought to light the serious situation facing the beach at Priory and at St. Ann's Bay, where untreated sewage was entering the sea from the St. Ann's Bay Hospital, and urged that the Council impress upon the Ministry of Health the need for the construction of a sewerage treatment plant. The Education Officer stationed in Ocho Rios is to be informed of the poor sanitary conditions at the Blackstonedge All-Age School. The Public Health Inspector told the Council that sanitary facilities at the school were inadequate, in the wake of a cut-back in the Indigent Latrine Fund this year in St. Ann. The Council was told that the current year's estimate had been cut back, and only repairs would be possible with the \$2,500 given to the entire parish this year. [Kingston THE DAILY GLEANER in English 8 Oct 82 p 14]

CSO: 5400/7507

## HEALTH MINISTRY LAUNCHES BILHARZIA CONTROL PROJECT

Blantyre THIS IS MALAWI in English No 6, Jun 82 pp 15-16

**[Text]** The Ministry of Health in May this year launched a pilot bilharzia control project near Nkhoma in the Linthipe Valley of Dedza and Lilongwe districts and Pirimiti in Zomba District as a prelude to a national programme to start 18 months later from that month.

The launching of this pilot project was announced by an official of the Ministry of Health Headquarters on May 7, 1982.

"Bilharzia is a debilitating disease which, according to some estimates, may affect half of the country's population," the official explained.

The pilot project, to cost K600,000 and funded jointly by the West German and Malawi Governments, aims at developing an effective method of treatment and control which can be applied nationally through a trained cadre of health workers.

"It is hoped that by the time the national programme is launched after October 1983, over 200 public health staff will have been trained in the methods of control which include provision of effective treatment, health education to the community and means to kill the snails which harbour bilharzia germs," the official added.

The pilot project areas were chosen because a different type of bilharzia is prevalent in each

area.

Between 60 and 85 per cent of the people living in the Linthipe Valley pilot project area have been found to be suffering from intestinal bilharzia, while 30 to 65 per cent in the Pirimiti area have been found to be suffering from urinary bilharzia.

Previously there have been attempts to control bilharzia in irrigation scheme areas, and the aim is now to attack the disease in other areas, away from the irrigated schemes.

The irrigation schemes are in Karonga, Nkhata Bay, Nkhotakota, Salima, Zomba, Nsanje and Chikwawa.

According to the official, bilharzia is passed from person to person through water snails which act as the intermediate hosts.

The eggs from adult worms are present in people suffering from the disease. These are passed into water either in human urine or faeces.

The eggs, which hatch into larvae in the water, enter the snails where they mature into free swimming larvae which penetrate the human body through the skin.

Bilharzia affects the kidney and bladder or intestines and the liver, the latter type being the most serious.

To control the disease, health

officials are treating persons with a single oral dose of a safe and highly effective drug and spraying to kill the snails

Although there are 18 known plants which can kill snails and fish in Malawi, not enough research has been done to determine which species could be used to control bilharzia carrying snails ●

CSO: 5400/26

ENCEPHALITIS RAMPANT IN EASTERN NEPAL

Kathmandu THE RISING NEPAL in English 8 Oct 82 p 3

[Text]

Biratnagar, (RSS):

Altogether 23 of the total 98 virus encephalitis patients admitted to various hospitals of the eastern development zone have died of the disease between Sept. 17 to Oct. 8.

Ten of the encephalitis patients have been rendered invalid and the remaining cured of the disease. It has been officially confirmed.

Twelve patients of Morang district, 8 of Udaipur district and 3 of Sunsari district died of the disease, according to hospital records.

Of the total 98 encephalitis patients admitted to the Koshi zonal hospital 23 patients are reported to have died.

Fifty-six patients of Morang district, 13 of Sunsari district, 4 of Jhapa district, 11 of Udaipur district and 4 of Saptari district had been admitted to the Koshi zonal hospital during this period.

The eastern regional office of the Malaria Eradication Association has been actively engaged in spraying insecticides with the cooperation of the Koshi zonal hospital and Biratnagar and Dharan town panchayats with an objective of eradicating the mosquitoes that helps to spread the killer disease.

The number of encephalitis patients visiting the hospital has been declining these days. It is learnt from the hospital.

## INCREASE IN MALARIA CASES REPORTED

Kathmandu THE RISING NEPAL in English 14 Oct 82 p 6

[Text]

### Janakpurdham, (RSS).

Incidence of malaria is considerably higher this year compared with last year in Dhanusa, Mahottari, Sarlahi and Sindhuli in Janakpur zone.

Of about four thousand malaria cases detected in these districts, Dhanusa alone is reported to have more than 150 malaria-infected persons.

Even in urban areas such as Janakpurdham, Jaleswore, Malangwa and Sindhuli madi the number of those getting fits of shivering fever is believed on the rise.

In the vicinity of Dhanusa portion of the Mahendra Highway some 1500 are suspected to have been suffering from the disease.

Spraying of malathion at Dhanukha, Mahottari and Sarlahi last year had been effective for controlling malaria there.

Malaria patients are being treated with urgency at present. Collection of blood samples of 200,000 persons is also complete.

Experts feel that mosquitoes are now resistant to the DDT but malathion has been found effective.

Malaria has not taken any toll in the area recently, though.

Meantime, the Dhanukha district Malaria Eradication Association has launched a special programme at the Singharjeda and Kurtha village panchayat, outside the town panchayat area.

Under the programme local ponds, canals and wells are being cleaned.

Encephalitis patients are reporting to Janakpur, Jaleswor and Malangwa hospitals, but the number of those affected by the disease is not known.

CSO: 5400/4317

NEPAL

BRIEFS

ENCEPHALITIS DEATHS IN BHERI--Nepalgunj. (RSS)--Eight persons suffering from virus encephalitis have died at Bheri zonal hospital in the last three weeks. Of the total twenty-one patients admitted to the hospital for treatment, six have returned home while the condition of three out of the seven patients still undergoing treatment is critical, according to hospital sources. [Text] [Kathmandu THE RISING NEPAL in English 4 Oct 82 p 1]

ENCEPHALITIS CASES IN NEPALGUNJ--Nepalgunj, (RSS)--The number of persons dying from virus encephalitis has reached 16 in Nepalgunj, according to the Bheri zonal hospital. Of the total 44 encephalitis patients admitted to the hospital, 16 have died, 9 have been cured, three have left the hospital for treatment at other places and the rest is still undergoing treatment. Meanwhile 30 patients suffering from virus encephalitis are estimated to have died in Bardiya district recently. The patients of the hospital have been facing a lot inconveniences for lack of a doctor at the local hospital. Meanwhile the district panchayat has requested His Majesty's Government to dispatch doctors and medicines for treatment of the patients. [Kathmandu THE RISING NEPAL in English 9 Oct 82 p 1]

CSO: 5400/4317

## NEW HEALTH PACKAGE FOR THE COUNTRY UNVEILED

Karachi DAWN in English 7 Oct 82 pp 1, 9

[Text]

ISLAMABAD, Oct. 6: The Government today unveiled a new health package to improve the quality of medical services in the country, as well as to upgrade the status of medical doctors.

The package was approved by the Cabinet on Tuesday. Health Minister Dr Naseeruddin Jogezi, told a Press conference here today.

The Press conference was also briefly addressed by Dr Mahbubul Haq, Deputy Chairman of the Planning Commission, who headed a committee dealing with the need for the establishment of a nationwide health care system, with special reference to the employment and service prospects of doctors.

Begum Afifa Mamdot, Minister of State for Health and Social Welfare, and Dr Basharat Jaabi, adviser to the President on Health, were also present.

In a written statement at the Press conference, Dr Jogezi said, "the decisions of the Cabinet will have far-reaching implications for restructuring the entire health care system in the country and for improving the employment prospects of doctors on a permanent basis".

The package includes both the short-term and long-term measures. Parts of its long-term measures will be included in the sixth Five-Year Plan which is scheduled to be launched from July 1, 1983.

The expenditure on health care may considerably go up, when the integral health care system for the rural and urban areas will be established. Then a major expansion of private clinics will be possible. A

professional growth of the doctors will be assured and the current unemployment of doctors will be overcome, as a result of the implementation of the package.

Dr Jogezi, explaining the scope of the scheme said, that a nationwide integrated system of health care will be established during the Sixth Plan to provide adequate health facilities both to the rural and urban areas. It envisages "a systematic link between the village community and the super-structure of the modern health system". A network of basic health units (BHU) responsible for midwifery, child care, family planning, school health service and all medical care within its area, will be managed by a doctor and a suitable number of paramedics.

Some of the key elements of the new health plan are:

Additional posts of doctors in the rural areas, on the basis of one doctor for each BHU and a third doctor for rural health centre (RHC) will be sanctioned.

About 1,500 additional posts of doctors will be sanctioned this year to provide employment opportunities to the currently unemployed doctors.

A national rural health service will be established in which each male doctor will have to work in rural areas for two years, and each female doctor for one year, with necessary incentives to join the service.

Reasonable residential accommodation facilities of post graduation and scholarship, compulsory rotation for posting in rural areas, and concessions and incentives for establishing private practice will be linked with the period of service in the rural areas.

### Working hours

The normal working hours of hospitals will be extended from 8 a.m. to 8 p.m. on double shift basis, wherever possible. It will shorten the waiting time in the hospitals, provide better medical care to the people, and absorb more doctors on a regular basis.

All newly graduating doctors will be provided practical training as house surgeons and physicians for a one-year period. Baluchistan and the NWFP are already providing this opportunity on a 100 per cent basis, while Sind and Punjab are providing house jobs to 55 per cent of medical graduates. These two governments will develop practical plans to provide 100 per cent house jobs in 1983-84 and 1984-85.

The Government has no intention of reducing the number of seats in medical colleges, but some re-adjustment may be made in the existing medical colleges to reduce congestion in over-crowded facilities, in order to improve the quality of medical education. No new medical college will be opened during the next five years. Instead, inadequate facilities of existing colleges will be improved, particularly by adding more teaching beds.

Admission to medical colleges will be on the basis of a new admission policy, which will be based on strict standards for admission, including entrance examination by the medical colleges.

Tehsil, taluka and district hospitals will be strengthened to provide adequate referral care.

The Government has decided, in principle, to create a professional cadre for doctors (as well as for other professions) which will allow professional growth. This will also permit vertical mobility to top professional levels in a proper pyramid. This will not debar doctors' mobility to top administrative positions, but will strengthen their case for holding top positions. The detailed proposals developed by Dr. Mahbubul Haq Committee for a professional service structure

for doctors have been sent to the National Pay Committee (Kazi Committee), to be examined and finalised along with proposals for other professions and civil servants.

Opening of private clinics will be encouraged through various forms of concessions and incentives, including tax rebates, and loans, with a view to ensuring that over 50 per cent of the future output of doctors is accommodated in the private sector.

A task force will be created in the Ministry of Finance to review the existing incentives and bottlenecks and suggest ways and means to provide more attractive opportunities for private doctors.

The current 99 per cent subsidy in the medical education will be gradually reduced in a phased manner, and the present low tuition fee of Rs 15 per month in medical colleges will be revised upwards, also in a phased manner, including the possibility of a higher admission fee. The poor and indigent students will be financed from the 'Zakat' funds.

Dr. Mahbubul Haq said introduction of a double shift system will help the patients a lot and also provide jobs to more doctors.

Begum Afifa Mamdot said it is the endeavour of the Government to solve the problems of the doctors and expand the health facilities. The new policy will help achieve that goal.

Dr. Basharat Jazbi said the new package takes care of the health needs of the country, and those of the medical doctors.

Dr. Haq said, at present, there is one doctor in the country for 5,320 people, one hospital bed for 20,020 persons, and one nurse for 10,040 persons. The situation will greatly improve by the end of the Sixth Plan, which will triple the health expenditure to six per cent of G.N.P. a year. He said at present the expenditure per head is Rs ten a year, and the expenditure on medicines is Rs one per person, a year.

PAKISTAN

BRIEFS

HERBS FOR CANCER RESEARCH--Pakistan has exported a considerable amount of a local herb "podophyllum emodi" to Switzerland for use in research on liver cancers, through Sandoz (Pak) Ltd which has cultivated this herb in farms in Abbottabad, Kalabagh, Donga Gali, Kaghan, Swat and Azad Kashmir. The company has invested considerable time and money in cultivation of herbs. [Karachi DAWN in English 7 Oct 82 p 3]

CSO: 5400/4316

PHILIPPINES

RISE IN INFECTIOUS DISEASES REPORTED

Manila BULLETIN TODAY in English 16 Oct 82 p 5

[Text]

The incidence of five infectious diseases increased during the week, afflicting mostly Metro Manila residents, the disease intelligence center of the Ministry of Health reported yesterday.

A total of 173 cases of pneumonia were reported and admitted during the week at the San Lazaro hospital (SLH). The number of admissions are higher than the previous week's level of 165 cases and the five-year median of 138 cases.

Of the 173 cases, DIC chief Dr. Julio Valera said, 159 cases came from Metro Manila while the rest were from neighboring provinces and cities.

The number of pa-

tients hospitalized due to diarrhea likewise rose with 167 admissions at the SLH during the week. A significant number of diarrhea cases were believed to be unreported. The level, however, is still below epidemic proportions and the five-year median of 255.

Based on SLH reports, 159 cases were from Metro Manila and eight from the surrounding provinces and cities, the DIC said. Telegraphic reports reaching the DIC disclosed 12 cases of diarrhea from Dagupan city, eight from Aparri, Cagayan, six from Amulung, Cagayan and four from La Paz, Leyte.

CSO: 5400/4318

SOUTH AFRICA

BRIEFS

TRANSKEI CHOLERA DEATH--The Deputy Secretary of Health in Transkei, Dr Gertrouda Solledder, said a suspected cholera case had died at the Isilimela Hospital yesterday. Another cholera patient was hospitalised, also at Isilimela, near Port St Johns. Dr Solledder said steps were being taken to control the situation. Special teams had been sent to Port St Johns and Ngqeleni areas where there were suspects.--Sapa. [Text] [Johannesburg THE CITIZEN in English 19 Oct 82 p 10]

CSO: 5400/27

SRI LANKA

BRIEFS

CHOLERA DEATHS REPORTED--Two persons died of cholera and four other positive cases of cholera were reported from Mutur, according to reports reaching police headquarters yesterday. [Text] [Colombo DAILY NEWS in English 9 Oct 82 p 1]

CSO: 5400/4318

BRIEFS

DYSENTERY DEATHS IN TUNDURU DISTRICT--A total of 80 persons have died and another 2,982 are being treated in five villages in Tunduru District, Ruvuma Region as a result of dysentery which broke out in April this year. The deputy chief physician of Ruvuma Region, F. Njau, said that a total of 44 villages out of 90 villages in Tunduru District have been stricken with this disease up to last month. When he issued a report before the regional health committee in the city of Songea yesterday, he said that it is now difficult to obtain accurate statistics from all 44 villages because of problems of communications caused by a shortage of petroleum and diesel fuel. Dysentery has already broken out in Songea District and 12 persons have been hospitalized at the regional hospital and one person has already died as a result of this disease. [Excerpt] [Dar es Salaam UHURU in Swahili 15 Oct 82 p 3]

DECLINE IN ENCEPHALITIS INCIDENCE--Tabora--Sleeping sickness in Tabora region has been greatly reduced. Between 1971 to 1981, only 103 people were afflicted with the disease. The 1981 yearly report on the prevention of sleeping sickness and the elimination of tsetse fly in Tabora region indicates that the disease has been reduced because of increased community living in villages, and educating the people on the danger of the disease. [Text] [Dar es Salaam DAILY NEWS in English 14 Oct 82 p 3]

LEPROSY, TUBERCULOSIS INCIDENCE--All leprosy and tuberculosis patients who were registered in 1982 in Kindondoni District are receiving treatment. This year the number of tuberculosis patients total 237. With regard to leprosy, there is a total of 112 patients. The tuberculosis and leprosy coordinator for the districts, Likungula, stated that tuberculosis patients total 428 and leprosy patients total 412 in all districts. [Excerpt] [Dar es Salaam UHURU in Swahili 1 Oct 82 p 6]

CSO: 5400/3/

## HEMORRHAGIC FEVER EPIDEMIC SUCCESSFULLY CONTROLLED

Hanoi HANOI MOI in Vietnamese 10 Aug 82 p 2

[ Article by X. H.: "Assistance Extended to Huu Bang Village in Fighting Hemorrhagic Fever Epidemic" ]

[Text] The recent outbreak of hemorrhagic fever in Huu Bang Village (Thach That District) later became an epidemic. The district and village tried hard to develop the measures to stop the epidemic, but their efforts were far from sufficient.

In that situation, the Public Health Service promptly sent a group of cadres consisting of 11 physicians and doctor's assistants of the Preventive Hygiene Station and Vietnam-Cuba Hospital to the village to assist in controlling the epidemic.

The group worked with a sense of urgency, even on holidays and beyond the regular working hours. It organized an investigation to find the infected persons throughout the village and, along with the local physicians and doctor's assistants, to accept and treat them right in the village, thus reducing the number of patients having to be sent elsewhere for treatment.

An investigation of the hemorrhagic fever carrier insects in all four hamlets showed a large number of disease-transmitting mosquitoes. The group urgently organized spraying of mosquito-killing chemicals in all homes, which was completed in 3 days. After the spraying, an investigation found no hemorrhagic fever carrier mosquitoes. Furthering this result, it discussed with the administration and mass organizations the organization of a general hygiene-practicing drive in the entire village and the need to put an end to letting hogs move about freely in the streets of the village. In only 4 days, 1,500 fish were put in drinking water tanks and pieces of broken bottles and empty cans, which provided place for mosquito larvae to live, were collected and filled 30 carts (4 tons).

The group also used propaganda to propagate the scientific knowledges that would help the people to know more about practicing hygiene in connection with their living and how to prevent and control the epidemics that usually break out in the summer.

In 10 days the number of hemorrhagic fever patients in the village went down.

5598

CSO: 5400/4313

MEASLES DEATHS, PREVENTION MEASURES

Lusaka DAILY MAIL in English 11 Oct 82 p 3

[Excerpt]

**ABOUT 40** children died of measles in the Livingstone district between July and August, chief health inspector, Mr Teddy Chawalika said yesterday.

Mr Chawalika said the disease had claimed many children aged up to four years and this had forced the council to launch an immunisation campaign.

He said the council was working hand in hand with the Ministry of Health to immunise children against the disease which had reached alarming proportions in southern and Copperbelt provinces.

He said the campaign against measles and malnutrition which started a week ago

would be conducted in all townships and the peri-urban areas for a month.

"We have received overwhelming response from the people to the extent that our officers have failed to cope with the queues we hope that this campaign will reduce instances of the disease," he said.

Meanwhile the council has failed to remove street vendors due to lack of transport.

Mr Chawalika said the council with assistance from the police was doing all it could to throw out street vendors and the public also had a duty to stop buying foodstuffs sold in unhygienic conditions.

CSO: 5400/25

ZAMBIA

BRIEFS

ZAMBIA, ZAIRE CHOLERA PREVENTION--The Zambian and Zairean health officials are to meet in Lubumbashi, Zaire, before the end of the year to find ways and means of preventing the outbreak of cholera between the two countries. Minister of State for Health, Mr John Mwondela, said in Lusaka yesterday the meeting on prevention of cholera between the two countries was a follow-up to a World Health Organisation (WHO) southern region meeting held in Libreville, Gabon, last month. Mr Mwondela said his ministry was asked by the Zairean government to fix a date for the meeting. He pointed out that there was need to prevent cholera from spreading between the two countries.--ZANA [Text] [Lusaka DAILY MAIL in English 13 Oct 82 p 5]

CSO: 5400/25

ARGENTINA

PUBLIC HEALTH OFFICIAL ON SUCCESSFUL RABIES CAMPAIGN

Buenos Aires LA PRENSA in Spanish 11 Sep 82 sec 2 p 6

[Text] At a press conference Dr Tomas Manuel Banzas, secretary of Public Health and Environment of the municipal government of Buenos Aires, told of actions taken in connection with the prevention of rabies, which have resulted in no cases of animal rabies being recorded in this city within a period of one year. The most recent case occurred on 22 August 1981.

Dr Oscar Prada, director of the Pasteur Institute, explained the work that has been accomplished. Those present included Assistant Secretary of Public Health Dr Juan C. Cremona and Director General for Environment Hector Alvarez.

"First Time"

Dr Tomas Banzas said that "for the first time in the history of this city a year has gone by without any animal rabies cases." He added that "one of the basic aims, the prevention and control of this mortal disease, has been attained; and cases had been recorded in the capital for 180 years."

Comparison

A statistical comparison of recent years shows a trend toward eradication. It was explained that, in 1976, 227 cases were recorded; in 1977, there were 58 cases; in 1978, 37; in 1979, 16; in 1980, 21; and in 1981, 4; in the meantime, from 22 August 1981 until now, there have been no cases.

The most recent case of human rabies, the result of a bite from a rabid dog that lived in the federal capital, was in 1976, which means that no human cases have been recorded for 6 years.

The measures cited by the health authorities that contributed to successful prevention include Ordinance 35,227, the premises of which are reflected in the Register of Domestic Animals (up to now 83,454 animals have been registered), which also provides for obligatory vaccination and tattooing, so that lost animals may be returned to their rightful owners.

Also cited was the register of professional veterinarians who currently number 704 members, who perform the additional task of registering animals.

#### Sterilization

Emphasis was later placed on the promotion of surgical sterilization, carried out at the Pasteur Institute and by means of a mobile surgical unit that travels throughout the city to prevent uncontrolled animal reproduction.

Regarding the collection of animals that roam about on public streets, individual cages have been used for their transfer and their subsequent return, if they are registered. It was explained that in this way the old system of cruel persecution and indiscriminate killing has been abolished. At present between 400 and 500 abandoned animals are gathered per year. These figures seem insignificant, compared with those of former years.

Also mentioned were the intensification of anti-rabies vaccinations, in order to broaden the coverage of the prevention of rabies; and the supportive work of the Pasteur Institute with regard to the control of rabic zoonosis, and also other types of zoonosis. In the future, the Pasteur Institute will be the city's domestic animal hospital.

8255  
CSO: 5400/2005

BOTSWANA

BRIEFS

FOOT-AND-MOUTH VACCINATIONS--The Ministry of Agriculture has announced that cattle from the Bobirwa area will be vaccinated in the near future against foot and mouth disease no matter how emaciated they are. This is because of the recent outbreak of the foot and mouth disease in Zimbabwe at the areas geographically adjacent to Bobirwa. [Text] [Photo caption] [Gaborone DAILY NEWS in English 17 Sep 82 p 1]

CSO: 5400/20

MALAWI

BRIEFS

RABIES MEASURE--Machinga, Monday--An emergency dog tie up order of six and half kilometres radius of Liwonde Township is imposed from September 28 to October 1, 1982. This was announced by an official from the district veterinary office at Liwonde in a circular letter.--MANA [Text] [Blantyre DAILY TIMES in English 28 Sep 82 p 5]

CSO: 5400/22

MEXICO

BRIEF

BORING WORM AFFECTS CATTLE--Damages to nine states by the borer worm. Guadalajara, Jal, 4 October--Annual losses occasioned by the borer worm in the cattle areas of the states of Jalisco, Zacatecas, Nayarit, Aguascalientes, Guanajuato, Michoacan, Guerrero, Colima, and Mexico amount to about 1,500 million pesos, in spite of the weekly utilization of some 200 million sterile flies to combat the plague. Enrique Asin Aguelo, chief of Zone 3 of the Mexican-United States Committee for the eradication of the borer worm, indicated that in the Jalisco cattle area alone there is a 20 percent loss, because systems to eradicate the misfortune have not yet been fully introduced. He said that each week in Tuxtla Gutierrez, Chiapas, 550 million sterile flies are produced at the national level, but acknowledged that inflation and purchasing power have affected the present budget of 270 million pesos, which has resulted in a reduction of the application of the eradication programs. He said that, with respect to the committee of which he is a member, 80 percent of the allotment to combat the plague is contributed by the United States Government and 20 percent by Mexico. He emphasized that, in spite of the continuing effort on the part of both countries, it has not been possible to eradicate the plague. He said that at present there are three sterile fly dispersal centers, located in the airports of Guadalajara, Uruapan, and Nayarit, but that soon there will be an additional fourth center in the Acapulco, Guerrero, air terminal. [Text by Eduardo Chimalay, EXCELSIOR correspondent] [Mexico City EXCELSIOR in Spanish 5 Oct 82 p 7-D] 8255

CSO: 5400/2008

TAIWAN

BRIEFS

MEAT FROM WESTERN U.S. STATES BANNED--Taipei, 24 Sep (CNA)--The Board of Foreign Trade (BOFT) has announced a ban on all beef, pork, sausage and live cattle imports from Colorado, Utah, New Mexico and Arizona, effective immediately. According to the board, the highly communicable disease of vesicular stomatitis is rapidly spreading through the four-state region and affecting most cattle and pigs. The board noted that since Japan is likely to impose similar restrictions on imports from the region, local manufacturers of beef and pork may be able to use this opportunity to boost their frozen meat exports to Japan. [Text] [OW240427 Taipei CNA in English 0332 GMT 24 Sep 82]

CSO: 5400/4106

MEASURES TO PREVENT RABIES DISCUSSED

Hanoi SUC KHOE in Vietnamese 1 Sep 82 p 2

[Article by Le Dien Hong, MA, acting chief, Antirabic Hygiene Department, Public Health Ministry: "Actively Prevent Rabies"]

[Excerpt] According to statistics of our public health sector, the number of deaths from rabies, as a result of bites by suspected rabid dogs, is very high, and tends to increase. Each year, the mortality rate from rabies is 6th among 20 strictly controlled contagious diseases. In 1981, of 100,000 inhabitants 250 died of rabies--a figure higher than that of 6 contagious diseases added together, including those which everybody fears, and is eager to prevent and control, such as bubonic plague, flu, typhoid fever, polio and whooping cough. In reality, even more people have died from bites, given the unrecorded number of those bitten who failed to report for vaccination. Over 90 percent of victims of rabies are traced back to dog bites. The remainder is attributed to cats and other animals. Over 60 percent of persons bitten are of work age (over 15 years old). The disease occurs year round, usually peaking in the spring and summer (from March to September). Local morbidity incidences are closely linked to the tradition of raising dogs, with concentrations on Hanoi, Ha Son Binh, Vinh Phu, Bac Thai, Haiphong, Ha Nam Ninh, Quang Nam-Danang, Phu Thanh and Ho Chi Minh City.

In addition to human casualties, rabies causes society to lose annually about 200,000 work days spent on vaccination and treatment and in addition some 2 million dong is spent by the state on hundreds of tons of grain, food, first-rate glass and a great quantity of supplies and chemicals needed for vaccine production. If vaccine is not domestically produced and must be imported, the total cost will reach 1.5 million rubles (24 rubles per dose), or 6.0 million francs (33 francs per dose). Antirabic vaccine is a manufactured product which tolerates no secondary substitutes.

This fact underlines the importance of keeping of dogs for commercial purposes in cities and towns, to maintain social order and security.

The number of rabies victims in 1981 in 18 provinces and cities is known from the following:

Year	Vaccinated following bites
1970:	6,712 persons
1973:	11,531 persons
1976:	28,850 persons
1979:	36,418 persons
1981:	43,678 persons.

Despite annual increases in the quantity of vaccine produced and distributed since 1970, the needs still are not met. For instance, in 18 northern provinces and cities:

Year	Doses Supplied
1970:	10,000
1976-79:	40,000
1981:	46,620

In 1982, production cannot catch up with demands, which have increased by 100 percent over 1981. Hence, it is mandatory to restrict the raising of dogs or exterminate dogs in rabies-affected places. This is a massive job, requiring party and administration leadership, educational propaganda among the people, and the participation of many sectors. Nevertheless, it still is supervised loosely, with heavy reliance on public health and vaccination; this leads to inefficiency, wastes, and spread of the disease (because dogs are free to roam about and transmit the virus. The mere fact of detaining dogs and putting them under observation after they have bitten can save vaccine...).

#### Fundamental prevention and control of rabies caused by dog bites

The fundamental prevention and control of rabies caused by dog bite is based on two principles: Limiting and exterminating rabies in dogs; and protecting the victims of dog bites.

i. If the rabies problem is to be solved in our country, we must limit the dog population and exterminate rabies in dogs. Our dog population has continually increased; the increased raising of dogs is studded with many irrationalities. In the countryside, some families raise many dogs; in the cities, more and more people raise dogs and let them run loose. They are engaged in raising dogs for entertainment and as guard dogs.

Carrying out the Hanoi People's Committee's order on dog extermination, public security at a number of subwards in 3 city wards conducted an investigation into the number of dogs. As of May 1982, there were 8,817 of them. Based on the people's needs and habits, the movement to curb the dog population must follow distinct routes:

Limit the radius of the turn and the speed to a strict limit. The center of the turn should be in the middle of the turn, so during the turn, the turn radius is constant. The turn radius is measured from the center of the turn to the center of the turn.

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the following methods:  
1. *Qualitative* method  
2. *Quantitative* method  
3. *Qualitative-Quantitative* method  
4. *Qualitative-Quantitative-Statistical* method

ZIMBABWE

BRIEFS

PARVOVIRUS EPIDEMIC--Parvovirus, a dog-killing disease, is once again sweeping through Harare, a spokesman for the Zimbabwe Veterinary Association warned yesterday. The spokesman, who wanted to alert owners to the disease which kills 40 percent of dogs affected, said that all veterinary surgeons in Harare were battling to control the outbreak. "We have a massive outbreak of parvovirus and it is killing dogs throughout the Harare district and maybe further afield. When the disease strikes, it costs dog owners about \$50 to have each dog treated." The symptoms were vomiting, lack of appetite, listlessness and bloody diarrhoea. The virus had first struck in December 1980 and since then it has recurred every summer. "The public should have their dogs vaccinated again. Some had their dogs treated in December 1980 and have forgotten. It is very expensive if the vaccinations are not up to date," the spokesman said. Vaccinations should be done annually. [Text] [Harare THE HERALD in English 8 Oct 82 p 1]

CSO: 5400/20

BRIEFS

CARIBBEAN PESTICIDE MANAGEMENT--THIS week is being observed as Pesticide Awareness Week in St. Lucia. Forty-seven participants on Monday began a three-day workshop in pesticide management sponsored by the Pan-American Health Organisation (PAHO) and the Consortium for International Crop Protection (CICP). A spokesman for the planning committee said that the prime objective of the workshop is to train participants to train others at different levels. Participants are from St. Vincent, Grenada, Antigua, St. Kitts/Nevis, Dominica, Anguilla, Suriname, Barbados, Jamaica, Montserrat and St. Lucia. The six workshop instructors are Drs. J.E. Davies and R. Levine of the University of Miami; Dr. J. Greishop of the University of California; Prof. V. Freed of Oregon State University; and Mrs. J. Reid and Dr. John Hammerton of the Caribbean Agricultural Research and Development Institute (CARDI). The spokesman lauded the work of the 12-member local planning committee on pesticide management. The committee which comprises representatives of the Ministry of Agriculture; Ministry of Health; CARDI; the St. Lucia Banana Growers Association (SLBGA); WINBAN and two local distributors, Stanthur & Co. Ltd. and Renwick & Company has been largely responsible for the organisation of Pesticide Awareness Week. The week was officially declared open Sunday by Mr Clarence Rambally, Minister of State in the Ministry of Health. A series of radio talks and discussions form part of the week's activities. [Castries THE VOICE in English 22 Sep 82 p 1]

CSO: 5400/7509

## DIEBACK DESTRUCTION OF JARRAH FORESTS MAY BE ENDED

Perth THE WEST AUSTRALIAN in English 31 Aug 82 p 7

[Article by Alex Harris]

## [Text]

FORESTS Department scientists expect to know within two years whether Jarrah dieback disease can be held to a safe level.

After 18 years' research they think that, with effective management, a large part of the forest can be saved.

They are also reasonably sure that, even if isolated outbreaks occur, there will be no recurrence of the sweeping devastation that ruined more than 200,000 hectares of healthy trees between 1945 and 1965.

Though the disease has continued to spread since 1965 and 200,000 hectares of forest are now under quarantine, actual tree losses have been small.

The reason is that, except in special circumstances, Jarrah seems to have a natural resistance to phytophthora cinnamomi, the fungus that causes dieback.

"For years we lived with a loaded gun at our heads," said Dr. S. J. Shea, the department's chief dieback troubleshooter.

Big areas of forest were infected and we thought these could collapse overnight.

Work in the past year, however, suggests that the early wave of tree losses

was tied to specific site conditions and the worst damage has already been done."

Dr Shea bases his claims—and hopes—on work he has been doing with Dr Bryan Shearer, Dr Joanna Tippett and a team of research assistants at the Dwellingup research station.

### Savagely

They knew that the tropical, water-borne phytophthora bit most savagely into damp lowland forest where it could survive through out the year.

They also knew outbreaks of Jarrah dieback on upland sites were restricted to short periods when the soil was warm and wet during spring and autumn.

But these two facts, on their own, did not mesh because theoretically dieback should not be a problem at all in a Mediterranean climate like that of the South West, where conditions only marginally favour its survival.

"We have now found a key third category where the disease is particularly virulent on upland sites," Dr Shea said.

"These are the places where Jarrah grows on a layer of concreted sheet laterite.

Preliminary surveys

show that these are also the places where we suffered the heaviest tree losses between 1945 and 1965.

"Study of these sites has given us a picture of how the rapid mass decline of a forest can take place."

Overseas experience led the researchers to believe that phytophthora was confined to the surface soil and that the deeper it penetrated the ground the less deadly the fungus became.

Dr Shea and his team found these assumptions did not apply on the concreted laterite caps.

They found very high densities of fungus as far down as 75 centimetres, in holes that acted as permanent "wells" of infection.

They also found that the fungus reproduced in ponds on top of the laterite layer.

Mobile spores from both sites were spread by water flowing over the cap's surface.

This answered two questions: How the trees died and why they died in such numbers.

"The holes where phytophthora hangs on in the laterite are also the holes through which the jarrah's vertical roots forage in search of water," Dr Shea said.

"When the fungus attacks these roots the tree loses its water supply. Eventually, it dies of dehydration."

"But the source of the infection remains. It infects other trees with killing speed every time there is a run-off after rain."

The discovery of high concentrations of phy-

tophthora in the concreted laterite caps also explained another mystery: Why samples taken during summer on sites known to be badly infected showed only small traces of the fungus.

"We weren't looking in the right place," Dr Shea said.

"And we weren't asking the right questions. As soon as we recognised the importance of the jarrah's vertical roots and their pathways through the laterite we began to make progress."

### Hypothesis

As it stands, the hypothesis that Dr Shea and his team have built up is beginning to emerge as a model of simplicity and logic.

But it took years to reach this point. Starting from scratch, they assembled a mosaic of unrelated and out-of-sequence information.

Every step had to be tested, discarded or retained and set aside till it dovetailed with another fragment of data acquired in the same painstaking way.

But the dieback story does not end here.

An important breakthrough three years ago now fits more snugly into place.

This is the role of the bull banksia, the most susceptible of all native plants to phytophthora.

As the forest was cut for timber this species, once thinly distributed, came back in its thousands to fill the gaps on the forest floor.

The fungus established itself in the fine

feeding roots, which became a focus for highly mobile infective spores.

"The catch is that recent experiments show the banksia's vertical roots invariably follow the jarrah roots like guided missiles through the same holes in the concrete laterite cap," Dr Shea said.

"As soon as this happens the jarrah is doomed."

Over the years foresters have developed a range of techniques to improve the jarrah's chances of survival: Planting native legumes to upgrade the soil's nitrogen levels, a tight system of forest hygiene, extensive aerial surveys to pinpoint new outbreaks of disease and restrictions on movements within the quarantine areas.

### Prospect

No single technique can, on its own, control dieback but a "management package" adjusted to suit different site conditions offers the best prospect in 40 years for saving the remaining forest.

"We still have to identify all the areas of cap laterite and to define how high, unusual rains affect the reproduction and spread of the fungus below the ground," Dr Shea said.

"We need to find the most susceptible sites and to show how jarrah can resist the fungus under normal conditions.

"But if we take banksia out of the system it is very hard to see how phytophthora can continue to spread through the soil."

### CHEMICALS FOR STRANGE CROP DISEASE FOUND

Accra DAILY GRAPHIC in English 25 Sep 82 p 5

[Article by Wendy Asiama]

[Text] The Ministry of Agriculture has named two chemicals it considers the most effective for fighting the cassava mealy-bug (*Phenococcus Manihoti*) disease which has affected many crops in parts of southern Ghana.

The two chemicals, Aqtellic and Perfeakthion, have been accepted as the best out of a range of others because of their low poisonous effects.

Speaking in an interview in Accra yesterday, Mr C.H. Anamoah, Regional Plant Protection and Quarantine Officer disclosed that the disease is at present prevalent in the Volta Region, parts of Greater Accra and on the fringes of the Eastern Region.

The Division, which is said, is set to tackle and fight the mealy-bug as soon as the first spraying arrive in the country but indicated that transportation would be the other constraint that will delay the mass spraying.

He rejected the felling of trees as a solution to the disease and said the disease was first detected in 1979 in cassava plants and had spread to Ada by 1980.

He said its effect on cassava is more serious because it prevents photosynthesis and starves the plant of the minerals it needs for production.

In an interview with Professor A. Borello, the Secretary of Agriculture, he disclosed that his Ministry has obtained import licence for Shell Ghana Limited to bring in the needed chemicals to fight the disease and appealed to the public to take to expeditious action in the transfer of foreign exchange for the purpose.

Professor Bortei-Buku disclosed further that a committee has been set up to draw a national action programme to combat the disease. Lecturers in plant protection in the three universities have been co-opted to serve on the committee, he added.

The Secretary hinted that he has asked the Food and Agricultural Organisation (FAO) to provide expertise as well as organise international support for the eradication of the disease.

CSO: 3400/146

PAKISTAN

BRIEFS

GRANT FOR PARASITE CONTROL--Islamabad, Oct 8: The United States Government has awarded a three-year grant of Rs. 1,744,375 to Karachi University to develop control of a soil parasite that threatens Pakistan's fruit crops. The grant was announced today by Dr A. Morgan Golden and R. V. Rebois of the U.S. Department of Agriculture (USDA) who will work with Pakistani scientists in seeking ways of controlling the parasite known as nematode. Heading the team of scientists will be Dr Maqbool Ahmad of Karachi the university professor who has already completed a previous project in collaboration with the USDA.--PPI [Text] [Karachi DAWN in English 9 Oct 82 p 8]

PEST ATTACKS ON PUNJAB COTTON--Multan, Oct 10: Reports of several attacks by mites, dangerous cotton pests, have increased the fear that the cotton crop in the Punjab this year would be badly affected. The Director General, Agriculture, Punjab, Dr Ahmed Saeed Khan Chauri, has expressed fear that due to attack by mites the cotton crop will be affected in Punjab and the quality of this precious produce will not come out according to the expected high standard. Talking to newsmen here after completing his tour of the affected cotton fields in some cotton growing areas of Multan, Bahawalpur and Deraghazi Khan divisions where severe attacks have been reported by the mites during these days. [as published] He said that cotton in districts of Multan, Vehari Sahiwal and Okara has much been affected. However, he said that the Agriculture Department have adopted suitable and effective measures to protect the crop from further attacks. [as published] He said that under the circumstances 75 percent of cotton target is expected to be achieved. He said that unexpected attack by mites and other dangerous pests are due to use the new kinds of pesticides by some cotton growers. He said that use of pesticides approved by the Agriculture Department always prove useful for protection of crops from pests of all kinds. [as published] [Text] [Karachi DAWN in English 11 Oct 82 p 4]

CSO: 5400/4314

MIGRATION ROUTES OF HARMFUL INSECTS DISCOVERED

OW240236 Beijing XINHUA in English 0747 GMT 21 Oct 82

[Text] Nanjing, 21 Oct (XINHUA)--Chinese scientists have discovered the migration route of rice leaf rollers, rice plant hoppers and other harmful insects to improve pest prediction and control, a recent academic meeting of the Chinese Society of Entomology reported.

While flying back and forth from south to north in China, the insects concentrate in areas south and north of the Nanling Mountains, the watershed between the Yangtze and Pearl rivers. Scientists concluded that pest prediction in these areas is vital to the nation's pest control work. Based on this understanding, they can make "very accurate" predictions, the meeting reported.

In spring, scientists said, these insects drift along with a warm atmospheric current from the seas in Southeast Asia to areas embracing China's Guangdong Province, Guangxi Zhuang Autonomous Region and other areas north and south of the Nanling Mountains. They resume their northward migration in summer. While most land in the Yangtze River and Huai River basins, scientists have discovered that some may fly as far as northeast and northwest China.

As the weather turns cooler, the insects begin flying southward, in much greater hordes. By early autumn, they are in the rice-growing areas south of the Yangtze River and around October, they are in areas north and south of the Nanling Mountains again. Backed by a network of survey and prediction stations, scientists have pinpointed the route by following specially marked insects and netting them in the air and on the seas. Shanghai scientists, for example, fixed a nylon net one meter in diameter and a set of moth luring lamps on a cargo-passenger steamer that sailed a regular Shanghai-Dalian route to catch rice leaf rollers and other insects.

While improving pest prediction, scientists have worked out methods for pest control by improving crop systems and cultivation methods and introducing more pest-resistant strains and better insecticides.

Rice accounts for more than 45 percent of China's grain production. Rice plant hoppers, for example, may reduce output anywhere from 45 to 80 percent.

CSO: 5400/4107

PEOPLE'S REPUBLIC OF CHINA

BRIEFS

COTTON BOLLWORM VIRUS--Wuhan, 4 Oct (XINHUA)--Chinese biologists have designed and made the country's first set of equipment for cotton bollworm virus culture, marking a new step forward in controlling the pest, according to the Shashi Applied Automation Technology Institute in Hubei Province. The virus obtained from 5 to 10 cotton bollworms can mix enough insecticides for 1/15th of a hectare of cotton. The killing rate is more than 85 percent, research personnel say. Funded by the State Science and Technology Commission, the experiment in streamlining the virus production will soon enter into its intermediate stage. The equipment was designed by the Shashi Applied Automation Technology Institute and the Jingzhou Prefectural Institute of Microbiology. It consists of a mating and ovipositional box, a feed distributor, a worm breeding plate, a virus infection machine and a worm breeding plate washing machine. The streamlined method is between 10 and 20 times more efficient than the test tube breeding method. The feed mix costs are low and the mix does not affect the worm's physiological habit, research personnel say. China obtained the first nuclear polyhedrosis virus from dead cotton bollworms in 1974. [Text] [Beijing XINHUA in English 1213 GMT 5 Oct 82]

CSO: 5400/4105

UK SCIENTISTS CONDUCTING CLOVE DISEASE RESEARCH IN ZANZIBAR

Dar es Salaam DAILY NEWS in English 7 Oct 82 p 4

[Excerpt] **RESEARCH to combat clove tree disease is being undertaken by British scientists working in Indonesia and Zanzibar and at the Commonwealth Mycological Institute at Kew, West London. Their work is being funded by Britain's Overseas Development Administration (ODA). After 35 years of painstaking progress in combating the killer, which threatens one of the main sources of foreign exchange in an island such as Zanzibar, the scientists believe that clove trees dying from Sudden Death, one of the main afflictions may be affected by the same newly-discovered bacterium that is responsible for Sumatra disease in Indonesia. J. M. WALLER of the Commonwealth Mycological Institute reports . . .**

CLOVES have been the traditional source of income for Zanzibar (the islands of Pemba and Unguja) for more than a century. However the plantations of clove trees have been ravaged by diseases for many years and, despite much replanting, the death and debilitation of mature trees continue to limit and periodically reduce clove production. Attempts to understand the cause of these diseases, observed since the latter part of the last century, and to control them were slow to start.

Some progress was made between 1947 and 1953 by British scientists who were

able to suggest control measures, but, despite subsequent modifications and improvement to these measures, the clove diseases still cause problems for Zanzibar farmers.

#### SUSPECT PARASITE

This early work established that there were two types of disease, one which killed individual branches resulting in reduction in size of the crown of the tree and known as Acute Dieback, and the other which resulted in the rapid death of whole trees and called Sudden Death.

Acute Dieback is known to be caused by a parasitic

microfungus, *Endothia eugeniae*, which infects small twigs through wounds caused predominantly when the crop of flower buds is harvested. This is a widespread condition much more prevalent than Sudden Death and is known to occur in most other clove producing countries.

The cause of Sudden Death is more elusive. It was thought to be spread by a microfungus, *Valsa eugeniae*, which attacked the young roots and prevented them from ~~absorbing sufficient~~ ~~water~~ water to keep the tree alive.

As these feeder roots were progressively killed, the water tension inside the tree eventually reached a critical point at which the foliage suddenly collapsed and the tree died. *Valsa eugeniae* was never conclusively proved to be the cause of the disease and its role as the pathogen of Sudden Death has been disputed, especially since this fungus is known to occur in parts of Malaysia and Indonesia where Sudden Death does not occur.

At the request of the Tanzanian Government, scientists familiar with Sumatra disease visited Zanzibar to survey the problem there. They concluded that the time was ripe for a reappraisal of the Sudden Death disease particularly because of certain similarities to Sumatra disease, and that modern plant pathology techniques

should be brought to bear on the Acute Dieback problem.

As a result of this, a new initiative is being launched through Britain's technical co-operation programme. Dr Andy Dabek and Peter Martin, scientists from the ODA,

are equipping a small laboratory at Kizimbani, the agricultural research station on Unguja, and will try to unravel the biology of these diseases. They will maintain close contact with the three-man team in Indonesia, and with Rothamsted Experimental Station.

As far as Acute Dieback is concerned, there is a need to understand the life history of the causal fungus so that control measures can be applied at the most opportune time. Soil conditions appear to affect the incidence of this disease so the possibility of alleviating it by soil treatment requires investigating.

Modern techniques of plant culture may be able to reduce the size of clove trees and make harvesting easier so that there will be less of the wounding that admits the infection. The major objective of work on Sudden Death is to determine its cause. Is it caused by the same or a similar organism to that which causes Sumatra disease? This seems likely on theoretical grounds.

#### TRAINING LOCAL EXPERTS

Crop diseases have co-evolved with their plant hosts in areas where the crop progenitors originated. For cloves and their relatives this is the Indonesian archipelago and the occurrence of Sumatra disease is in accordance with this general theory. It seems very probable that the disease was transmitted to areas where cloves were grown subsequently, such as Zanzibar. However there are some differences between Sumatra disease and Sudden Death, particularly in the way they spread.

In time, adequate control of Sudden Death and Sumatra disease will be achieved, either by selecting resistant clove varieties or by preventing the spread of the disease to healthy trees — but this may take many years.

## GOVERNMENT SEEKS TO REVIVE CROP SPRAYING UNIT

Dar es Salaam DAILY NEWS in English 19 Oct 82 p 1

[Article by Charles Kizigha]

[Excerpt] THE Tanzania government in collaboration with the Food and Agriculture Organization (FAO), the International Red Locust Control Organization for East and Southern Africa (IRLCO-CSA) and Directorate of Civil Aviation (DCA), is keen to revive the aerial crop spraying unit — *Kilimo Anga* — at a cost of about 70m/-.

The Minister for Agriculture, Ndugu John Machunda, told the *Daily News* in Dar es Salaam yesterday that a project write-up had been completed and accepted by the four parties.

He said that the project encompasses the purchasing of two aircraft — Cessna Ag Husky make — from the United States, recruitment of a pilot with instructor ratings — one chief aircraft engineer, one agricultural pilot and one agronomist with spraying experience.

Ndugu Machunda said the instructor would train some local personnel to the standards required to fly such aircraft.

He said that irrespective of the country's economic problems his ministry, in conjunction with FAO and IRLCO-CSA was looking for financers to enable the

project take off because it had a vital role to play in improving the economy.

The minister said that *Kilimo Anga* had only one aircraft which was serviceable and four were out of order for various reasons which included accidents. "One aircraft is not enough particularly in a country like Tanzania which depends mainly on agriculture for both cash and food crop," he said.

Ndugu Machunda said that a minimum of 294 flying hours was necessary to attempt elimination of the grain-eating birds — quelea — from the most affected areas Dodoma, Kondoa, Singida, Basuto, Karatu, Kilimanjaro and Mombo.

Elaborating on the magnitude of spraying involved, the minister said that 400,000 hectares of maize, 99,000 of paddy, 47,000 of wheat, and 263,500 of millet and sorghum in Dodoma, Kondoa, Singida, Kilosa, Basuto, Karatu, Kilimanjaro and Mombo were vulnerable to the birds.

He added that 34,600 hectares of beans in Arusha Region were vulnerable to pests while 794,940 hectares in various parts of the country were prone to attack by armyworms.

Some 6,800 hectares of sugarcane at Tanganyika Planting Company (TPC) needed protection through spraying throughout the season, he said.

Ndugu Machunda said that the armyworm were sighted mainly in Dodoma, Arusha, Kilimanjaro, Morogoro and Singida regions.

He said that *Kilimo Anga* had to spray about 26,000 hectares to protect the crop and this required a minimum of 265 hours.

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November 10, 1982